

Application No.: 10/501,748
Amendment Dated: June 13, 2007
Reply to Office Action of: March 13, 2007

MTS-3493US

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A refrigerating cycle device comprising:

~~a refrigerating cycle which is formed by sequentially connecting a compressor which compresses a refrigerant which contains carbon dioxide,~~subsystem including:

a compressor that compresses a refrigerant which contains carbon dioxide,

~~a refrigerant-water heat exchanger which~~that ~~performs a refrigerant-water heat exchange between water which circulates in a water cycle and the refrigerant compressed by the compressor,~~

~~a first decompressor which is capable of decompressing~~configured to decompress ~~the compressed refrigerant passed through said refrigerant-water heat exchanger,~~

~~a first heat exchanger which~~that ~~performs a first heat exchange between the refrigerant which goes~~passed ~~through said first decompressor and first air,~~

~~an internal heat exchanger which~~that ~~performs an internal heat exchange between the refrigerant having passed through said first heat exchanger and the refrigerant before being sucked by~~subjected to a second heat exchange, said compressor receiving the refrigerant passed from an outlet of said internal heat exchange,

~~a second decompressor which~~that ~~decompresses the refrigerant having passed through~~from a further outlet of the internal heat exchanger, and

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a second heat exchanger ~~which~~that performs the second heat exchange between the refrigerant ~~which is decompressed~~ by the second decompressor and second air, ~~and~~, said second air different from said first air,

~~said internal heat exchanger; and~~

said refrigerating cycle subsystem providing a refrigerating cycle for said refrigerant by sequentially connecting said compressor, said refrigerant-water heat exchanger, said first decompressor, said first heat exchanger, said internal heat exchanger, said second decompressor, said second heat exchanger, and said internal heat exchanger, and

~~the~~a water cycle ~~which is formed by sequentially connecting subsystem~~ including:

a power engine ~~which~~that heats the water,

the refrigerant-water heat exchanger, the refrigerant-water heat exchanger receiving the water heated by the power engine,

a heater core ~~which is~~that receives the water passed through the refrigerant-water heat exchanger, said heater core arranged downstream of and in proximity to the second heat exchanger with respect to flow of said second air to receive the second air modified by flow through said second heat exchanger, and

a radiator, separate from said heater core, that receives the water passed through said heater core and passes the water to said power engine,

said water cycle subsystem providing a water cycle for the water by sequentially connecting said power engine, said refrigerant-water heat exchanger, said heater core and said radiator,

wherein an air conditioning capacity is adjusted by adjusting a degree of an opening of the second decompressor at ~~the~~a time of heating and dehumidifying.

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2. (Currently Amended) A refrigerating cycle device according to claim 1, wherein during the adjustment of the degree of the opening of the second decompressor at the time of heating and dehumidifying, a discharge temperature of the compressor is detected, the detected discharge temperature and a set discharge temperature are compared, and the degree of the opening of the second decompressor is increased when the detected discharge temperature is equal to or more than the set discharge temperature and is decreased when the detected discharge temperature is less than the set discharge temperature.

3-5. (Cancelled)

6. (Original) A refrigerating cycle device according to claim 1, wherein said refrigerating cycle device comprises a third bypass circuit which connects an inlet and an outlet of the first heat exchanger by way of a third open/close valve.

7. (Original) A refrigerating cycle device according to claim 1, wherein said refrigerating cycle device comprises a fourth open/close valve at an inlet of said first heat exchanger.

8. (Currently Amended) A refrigerating cycle device according to claim 1, wherein said refrigerating cycle device comprises:

a fifth open/close valve which is disposed between an outlet of said refrigerant-water heat exchanger and said first decompressor;

a first three-way valve which is disposed between an outlet of said first heat exchanger and an inlet of said internal heat exchanger;

a fourth bypass circuit which is connected by having one end thereof disposed between an outlet of said refrigerant-water heat exchanger and an inlet of said fifth open/close valve and the other end formed of said first three-way valve;

a second three-way valve which is disposed between ~~an~~said further outlet of said internal heat exchanger and an inlet of said second decompressor;

a fifth bypass circuit which is connected by having one end thereof formed of said second three-way valve and the other end thereof disposed between an outlet of said fifth open/close valve and an inlet of said first decompressor;

a sixth bypass circuit which is connected by having one end thereof disposed between an outlet of said first heat exchanger and said first three-way valve and the other end thereof disposed between said second three-way valve and said second decompressor and by way of a sixth open/close valve; and

refrigerant circulation mode changeover means which selectively changes over a steady mode in which the refrigerant which is flown out from said refrigerant-water heat exchanger is circulated by way of said fifth open/close valve and a start mode in which the refrigerant is circulated in said fourth bypass circuit and said fifth bypass circuit.

9-17. (Cancelled)

18. (Currently Amended) A refrigerating cycle device according to claim 1, wherein during the adjustment of the degree of the opening of the second decompressor at the time of heating and dehumidifying, a refrigerant temperature T_{eva} of the second heat exchanger is detected, a set refrigerant temperature T_{xeva} and the detected refrigerant temperature T_{eva} are compared, and the degree of the opening of the second decompressor is decreased when the detected refrigerant temperature T_{eva} is equal to or more than the set refrigerant temperature T_{xeva} and is increased when the detected refrigerant temperature T_{eva} is less than the set refrigerant temperature T_{xeva} .

19. (Currently Amended) A refrigerating cycle device according to claim 1, wherein the air conditioning capacity is further adjusted by adjusting a degree of an opening of the first decompressor at the time of heating and dehumidifying.

20. (Currently Amended) A refrigerating cycle device according to claim 19, wherein during the adjustment of the degree of the opening of the first decompressor at the time of heating and dehumidifying, a refrigerant temperature T_m of the first

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heat exchanger is detected, a set refrigerant temperature T_{xm} and the detected refrigerant temperature T_m are compared, and the degree of the opening of the first decompressor is decreased when the detected refrigerant temperature T_m is equal to or more than the set refrigerant temperature T_{xm} and is increased when the detected refrigerant temperature T_m is less than the set refrigerant temperature T_{xm} ,

a refrigerant temperature T_{eva} of the second heat exchanger is detected, a set refrigerant temperature T_{xeva} and the detected refrigerant temperature T_{eva} are compared, and the degree of the opening of the first decompressor is decreased when the detected refrigerant temperature T_{eva} is equal to or more than the set refrigerant temperature T_{xeva} and is increased when the detected refrigerant temperature T_{eva} is less than the set refrigerant temperature T_{xeva} .

21. (Currently Amended) A refrigerating cycle device according to claim 1, wherein the ~~dehumidifying~~refrigerating cycle device comprises blow-off air temperature detection means which detects a temperature of blow-off air blown off by way of said heater core and compressor operating frequency control means which controls an operating frequency of said compressor, and

said compressor operating frequency control means controls the operating frequency of said compressor in response to said detected air temperature.

22. (Currently Amended) A refrigerating cycle device according to claim 1, wherein the ~~dehumidifying~~refrigerating cycle device comprises discharged refrigerant temperature detection means which detects a discharged refrigerant temperature of said compressor and

a bypass circuit which bypasses between an outlet of said second heat exchanger and an inlet of said compressor by way of an open/close valve, and

said open/close valve has opening and closing thereof controlled in response to said detected discharged refrigerant temperature.

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23. (Previously Presented) A refrigerating cycle device according to claim 1, which is used as an air conditioner for a vehicle.